

ABSTRACT

An object of the present invention is to provide a humidifying apparatus capable of improving the
5 humidification efficiency while lowering the pressure loss of gas even when a low-pressure gas is used, and is suitably usable for fuel cells. The present invention relates to a humidifying apparatus for fuel cells, fabricated by loading a hollow fiber membrane element
10 into a container such that the space communicating with the hollow side of the hollow fiber membranes is isolated from the space communicating with the outer side of the hollow fiber membranes, wherein (a) the inner diameter of the hollow fiber membrane is larger than 400 μm , (b) the
15 water vapor permeation rate ($P'_{\text{H}_2\text{O}}$) of the hollow fiber membranes is $0.5 \times 10^{-3} \text{ cm}^3 \text{ (STP)/cm}^2 \cdot \text{sec} \cdot \text{cm Hg}$ or more, (c) the ratio ($P'_{\text{H}_2\text{O}}/P'_{\text{O}_2}$) of the water vapor permeation rate to the oxygen gas permeation rate of the hollow fiber membranes is 10 or more, and (d) the elongation at
20 tensile break of the hollow fiber membranes after hot water treatment in hot water at 100°C for 50 hours is 80% or more of that before the hot water treatment; particularly, the present invention relates to a humidifying apparatus for fuel cells where, if the
25 effective length of the hollow fiber membrane element is L and the inner diameter of the container into which the hollow fiber membrane element is loaded is D, L/D is 1.8 or more.